

IN THE CLAIMS

1. (Currently Amended) A low shock separation joint for coupling a first structure to a second structure comprising:

a male member having a first side with a first major surface and a second side, opposite said first side, with a second major surface, wherein at least one projection is formed on, and extends from, each of said first and second major surfaces;

a split female member having a first symmetrical half structure and a second symmetrical half structure, said first symmetrical half structure including a first flange and said second symmetrical half structure including a second flange opposing said first flange, wherein at least one projection is formed on, and extends from, each of said first and second flanges, wherein ~~surfaces of~~ said at least one projection on said first ~~and second~~ flange are configured to fit between and mate with ~~respectively mated to surfaces of~~ said at least one projection on said first ~~and second~~ major surface of said male member, and said at least one projection on said second flange are configured to fit between and mate with said at least one projection on said second major surface of said male member to prevent separation of the separation joint under tensile and compressive forces, and said female member being configured to clamp and hold said male member without any fastening mechanism holding said first flange and said second flange to said male member;

a cavity formed within said female member when said first symmetrical half structure and said second symmetrical half structure are placed together, said first and second flanges extending away from said cavity and said female member separating said cavity from said male member when said first symmetrical half structure and said second symmetrical half structure are placed together; and

an explosive device placed within the cavity of said female member, said explosive device when detonated releases said male member from said female member, by bending and physically modifying said first flange and by bending and physically modifying said second flange away from said male member, without causing breakage of any component of the separation joint.

2. (Original) The low shock separation joint as recited in claim 1 wherein said female member further includes a mount for attachment to the first structure.

3. (Canceled)

4. (Currently Amended) The low shock separation joint as recited in claim 1 wherein a clevis is formed for receiving the first structure when said first and second symmetrical half structures of said female member are coupled together and wherein said clevis comprises a portion of both said first and second symmetrical half structures of said female member.

5. (Previously Amended) The low shock separation joint as recited in claim 4 wherein said male member is placed between said first and second flange and wherein fastening the first structure to the female member couples said female member to said male member.

6. (Original) The low shock separation joint as recited in claim 5 wherein surfaces of said at least one projection of said first and second flange mated respectively to surfaces of said at least one projection of said first and second major surface of said male member are non-locking.

7. (Original) The low shock separation joint as recited in claim 6 wherein said explosive device when detonated bends said first and second flange away from said male member and wherein first and second flange move in an arc away from said male member.

8. (Original) The low shock separation joint as recited in claim 1 wherein said explosive device has a first volume within said cavity of said female member prior to detonation, wherein said explosive device has a second volume after detonation, and wherein said second volume is greater than said first volume.

9. (Previously Amended) The low shock separation joint as recited in claim 1 wherein said explosive device includes an expandable housing around an explosive material and wherein said expandable housing does not rupture when said explosive material is detonated.

10. (Original) The low shock separation joint as recited in claim 1 wherein the male member further includes a mount for attachment to the second structure.

11. (Original) The low shock separation joint as recited in claim 1 wherein said female member comprises a deformable metal.

12. (Withdrawn) A method for reducing shock in an explosive separation joint comprising the steps of:

coupling a male member to a female member such that surfaces on said male member are in intimate contact with corresponding surfaces on said female member such that said surfaces on the male and female member prevent separation of the separation joint under tensile and compressive forces;

detonating an explosive device in a female member of the separation joint; and

expanding a housing of said explosive device from a first volume to a second volume;

and

using a volume increase of said explosive device to bend flanges of said female member away from one another wherein surfaces in intimate contact are moved out of contact with one another to decouple said male member from said female member.

13. (Withdrawn) The method for reducing shock in an explosive separation joint as recited in claim 12 further including a step of angling said surfaces on said male member and the female member such that they are non-locking.

14. (Withdrawn) The method for reducing shock in an explosive separation joint as recited in claim 12 further including a step of holding surfaces on said male member in intimate

contact with corresponding surfaces on said female member by fastening said female member to a structure.

15. (Withdrawn) The method for reducing shock in an explosive separation joint as recited in claim 14 further including a step of bending said first and second flanges in an arc away from one another.

16. (Withdrawn) A method of assembling an explosive separation joint comprising:  
providing a male member of the separation joint;  
providing an explosive device;  
aligning a first half structure of a female member of the separation joint to the male member and said explosive device;  
aligning a second half structure of said female member of the separation joint to the male member and said explosive device; and  
fastening the first half structure to said second half structure.

17. (Withdrawn) The method of assembling an explosive separation joint as recited in claim 16 further including the steps of:  
placing a first structure in a clevis formed by placing said first and second half structure together; and  
bolting said first structure to said clevis to rigidly fasten said male member to said female member.

18. (Withdrawn) The method of assembling an explosive separation joint as recited in claim 17 further including a step of housing said explosive device in a cavity formed when said first and second half structure are placed together.

19. (Withdrawn) The method of assembling an explosive separation joint as recited in claim 18 further including the steps of:  
aligning projections on a first major surface of said male member to projections on said first half structure;

aligning projections on a second major surface of said male member to projections on said second half structure;

mating surfaces of said projections on said first major surface of said male member to surfaces on said first half structure; and

mating surfaces of said projections on said second major surface of said male member to surfaces on said second half structure.

20. (Withdrawn) The method of assembling an explosive separation joint as recited in claim 19 further including a step of fastening a second structure to a flange on said male member.

21. (New) A low shock separation joint for coupling a first structure to a second structure comprising:

a male member having a first side, a second side opposite the first side, a plurality of first protrusions formed on and extending from the first side, and a plurality of second protrusions formed on and extending from the second side;

a split female member having a first half structure and a second half structure, the first half structure having a first flange and a plurality of first flange protrusions formed on and extending from the first flange, the second half structure having a second flange and a plurality of second flange protrusions formed on and extending from the second flange, the first flange opposing the second flange, and the first flange protrusions and the second flange protrusions extending toward one another, wherein the plurality of first protrusions are configured to fit between and mate with the plurality of first flange protrusions, the plurality of second protrusions are configured to fit between and mate with the plurality of second flange protrusions, the plurality of first flange protrusions are configured to fit between and mate with the plurality of first protrusions, and the plurality of second flange protrusions are configured to fit between and mate with the plurality of second protrusions to prevent separation of the separation joint under tensile and compressive forces, and wherein the split female member is configured to clamp and hold the male member without any fastening mechanism holding the first flange and the second flange to the male member;

the first half structure comprising a first cavity formed therein, and the second half structure comprising a second cavity formed therein, the first cavity and the second cavity forming a cavity for the female member when the first half structure and the second half structure are placed together;

the first and second flanges extending away from the cavity, and the female member separating the cavity from the male member, when the first half structure and the second half structure are placed together; and

an explosive device placed within the cavity, the explosive device when detonated releases the male member from the female member, by bending and physically modifying the first flange away from the male member and by bending and physically modifying the second flange away from the male member, without causing breakage of any component of the separation joint.

22. (New) A low shock separation joint for coupling a first structure to a second structure comprising:

a male member having a first side, a second side opposite the first side, a plurality of first protrusions formed on and extending from the first side, and a plurality of second protrusions formed on and extending from the second side;

a split female member having a first half structure and a second half structure, the first half structure having a first flange and a plurality of first flange protrusions formed on and extending from the first flange, the second half structure having a second flange and a plurality of second flange protrusions formed on and extending from the second flange, the first flange opposing the second flange, and the first flange protrusions and the second flange protrusions extending toward one another, wherein each of the plurality of first protrusions and each of the plurality of second protrusions includes a flat upper surface and an angled lower surface opposite the flat upper surface, each of the plurality of first flange protrusions and each of the plurality of second flange protrusions includes an angled upper surface and a flat lower surface opposite the angled upper surface, the flat upper surfaces mate with the flat lower surfaces and the angled upper surfaces mate with the angled lower surfaces when the first half structure and the second half structure are placed together around the male member, and the split female

member is configured to clamp and hold the male member without any fastening mechanism holding the first flange and the second flange to the male member;

the first half structure comprising a first cavity formed therein, and the second half structure comprising a second cavity formed therein, the first cavity and the second cavity forming a cavity for the female member when the first half structure and the second half structure are placed together;

the first and second flanges extending away from the cavity, and the female member separating the cavity from the male member, when the first half structure and the second half structure are placed together; and

an explosive device placed within the cavity, the explosive device when detonated releases the male member from the female member, by bending and physically modifying the first flange away from the male member and by bending and physically modifying the second flange away from the male member, without causing breakage of any component of the separation joint.